

Office Action Summary

Application No.

10/584,966

Applicant(s)

FANG ET AL.

Examiner

JARREAS C. UNDERWOOD

Art Unit

2877

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-7,14-25,28-30 and 37-43 is/are rejected.
- 7) ☒ Claim(s) 2,3,8-13,26,27 and 31-36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-849)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/5/2006.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date 20080604.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 7, 15-22, 23, 25, 30, 38-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley et al (United States Patent 5,790,247).

1. As to claim 25, Henley teaches an apparatus for detecting faults, such as inclusions, within a transparent panel which is located in an ambient atmosphere, the apparatus comprising:

a light source (Figure 1, element 114);

an interface (Figure 4, element 115) including one or more interface elements having a refractive index higher than the ambient atmosphere and transparent to light generated by the light source;

light source support means (Figure 1, the optic fiber between elements 114 and 115) for locating the light source in a positional relationship to the interface such that when the interface is contacting the panel, light generated by the light source is transmitted through the interface into the panel (Figure 4, elements 115, 131 & 133) and propagates within the panel along a path where total internal reflection is realized at surfaces of the panel (column 5, lines 38-39); and

a detector (Figure 1, element 105) for detecting light scattered by the faults and exiting the panel.

While Henley does not explicitly state that the interface has a refractive index higher than the ambient atmosphere, it is inherent that a physical coupling would have an index of refraction greater than the open-air atmosphere of Henley (see . Likewise, though Henley does not state that the interface is transparent to light generated by the light source, it is inherent in the function of an optical coupling to allow light to pass.

2. As to claim 30, Henley teaches everything claimed, as applied above in claim 25, in addition the one or more interface elements include at least one interface element including a portion which has a generally prism-shaped cross-section when viewed in a direction perpendicular to the path of light generated by the light source (Figure 4, element 115). Examiner's position is that the mostly-rectangular shape fulfills the limitation "generally prism-shaped" limitation.

3. As to claim 38, Henley teaches everything claimed, as applied above in claim 25, in addition one or more electronic detectors (Figure 1, element 105) for detecting the scattered light.

4. As to claim 39, Henley teaches everything claimed, as applied above in claim 38, in addition an automated image analysis system (Figure 1, elements 105, 110, 111) arranged to receive data output by the one or more electronic detectors.

5. As to claim 40, Henley teaches everything claimed, as applied above in claim 39, in addition the automated image analysis system is arranged to determine from the

output of the one or more detectors the type of fault which scattered the light (Abstract, 3rd sentence).

6. As to claim 41, Henley teaches everything claimed, as applied above in claim 40, in addition the automated image analysis system is arranged to discriminate air bubbles from solid inclusions based on their size, shape and/or reflectivity (Abstract, and column 2, lines 65, 66). Examiner reads "void" to be not different from "bubble".

7. As to claim 42, Henley teaches everything claimed, as applied above in claim 38, in addition a plurality of the cameras (Figure 2, elements 105) and a corresponding plurality of the light sources (column 8, lines 29-31), the cameras being arranged to observe the illuminated region of the panel from different directions.

8. As to claim 43, Henley teaches everything claimed, as applied above in claim 42, in addition an automated image analysis system arranged to receive data output by the one or more electronic detectors (Abstract, and column 2, lines 65, 66), and in which the automated image analysis system is arranged to determine the position of a detected inclusion in the thickness direction of the panel (column 9, line 66 – column 10, line 8).

9. As to claims 1, 7 and 17-22, the method would flow from the apparatus of claims 25, 30 and 38-43, respectively.

10. As to claim 15, the method would flow from the apparatus of claim 25. Examiner reads Henley as operating in a standard atmosphere in the absence of teachings to the contrary.

11. As to claim 16, the method would flow from the apparatus of claim 25. Examiner refers applicant to Figure 1, element 109.

12. As to claim 23, the method would flow from the apparatus of claim 25. Examiner refers applicant to column 1, lines 7-9.

Claims 4, 14, 24, 28, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley in view of Takeuchi et al (United States Patent 6,226,080).

13. As to claim 28, Henley teaches everything claimed, as applied above in claim 25, with the exception of the interface includes a plurality of the interface elements. However to do so is well known as taught by Takeuchi. Takeuchi teaches the interface includes a plurality of the interface elements (Figure 11, elements 114). It would have been obvious to one of ordinary skill in the art at the time of invention to have the interface include a plurality of the interface elements, in order to improve detection accuracy.

14. As to claim 37, Henley teaches everything claimed, as applied above in claim 25, with the exception of at least a portion of the surface of the interface, other than the portions through which the light beam enters the interface and the portion of the interface which contacts the panel, has a coating for reflecting light. However to do so is well known as taught by Takeuchi. Takeuchi teaches at least a portion of the surface of the interface, other than the portions through which the light beam enters the interface and the portion of the interface which contacts the panel, has a coating for reflecting light (Figure 6, element 112). It would have been obvious to one of ordinary skill in the art at the time of invention to have at least a portion of the surface of the interface, other than the portions through which the light beam enters the interface and

the portion of the interface which contacts the panel, have a coating for reflecting light, in order to increase the amount of light directed towards the panel.

15. As to claims 4 and 14, the method would flow from the apparatus of claims 28 and 37, respectively.

16. As to claim 24, the method would flow from the apparatus of claim 28. Examiner refers applicant to the Abstract, line 1.

Claims 5, 6, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley in view of Glas (DE 103 16 707.2). Gerstner et al (United States Patent 7,292,332) is the corresponding US patent, and all references below refer to Gerstner.

17. As to claim 29, Henley teaches everything claimed, as applied above in claim 25, with the exception of means for providing the interface with a liquid coupling layer interposed between the panel and the one or more interface elements. However to do so is well known as taught by Gerstner. Gerstner teaches means for providing the interface with a liquid coupling layer interposed between the panel and the one or more interface elements (column 5, lines 35-46). It would have been obvious to one of ordinary skill in the art at the time of invention to have means for providing the interface with a liquid coupling layer interposed between the panel and the one or more interface elements, in order to compensate for geometric differences.

18. As to claim 5, the method would flow from the apparatus of claim 29.

19. As to claim 6, the method would flow from the apparatus of claim 29. Examiner refers applicant to column 5, line 39.

Allowable Subject Matter

Claims 2-3, 8-13, 26-27, 31-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. As to claims 26 and 2, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus or method comprising one or more interface elements include a body of flexible material, whereby upon pressing the body against the panel the body is deformed to conform to the surface of the panel, in combination with the rest of the limitations of the claim.

21. As to claims 31 and 8, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus or method comprising an interface being adapted to be moved over the panel, in combination with the rest of the limitations of the claim. Examiner emphasizes it is the movement of the point of physical contact between the interface and the panel which is seen as allowable subject matter.

22. As to claims 36 and 13, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus or method in which the interface includes at least one interface element which is a flexible wave guide sheet, in combination with the rest of the limitations of the claim. Examiner emphasizes it is the flexible sheet limitation which separates the claim from the invention of Henley, Figure 3, element 115.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JARREAS C. UNDERWOOD whose telephone number is (571) 272-1536. The examiner can normally be reached on Monday-Friday 0530-1400.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. C. U./
Examiner, Art Unit 2877

Jarreas Underwood
Patent Examiner
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8/1/2008

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/L. G. Lauchman/

Primary Examiner, Art Unit 2877

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